

Amendments to the Claims:

The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A plasma processing apparatus comprising:
a vacuum reactor having processing gas introduction means and
evacuation means;
a shield electrode formed on an outer circumferential wall of the vacuum
reactor; and
a specimen placing device having an antenna electrode for radiating high
frequency power into the vacuum reactor;
wherein the shield electrode surrounds the vacuum reactor so as to control
voltage of the outer circumferential wall, and
wherein first high frequency power is supplied to the antenna electrode,
and high frequency power at a frequency lower than that of the first high
frequency power is supplied to the antenna electrode and the shield electrode.
2. (Currently Amended) A plasma processing apparatus comprising:
a vacuum reactor having processing gas introduction means and
evacuation means;
a shield electrode formed on an outer circumferential wall of the vacuum
reactor;

a specimen placing device having an antenna electrode for radiating high frequency power into the vacuum reactor; and

an exciting coil outside the shield electrode formed on an outer circumference of an outer circumferential wall of the vacuum reactor;
wherein the shield electrode surrounds the vacuum reactor so as to control the voltage of the outer circumferential wall, and a first high frequency power is supplied to the antenna electrode, and high frequency power at a frequency lower than that of the first high frequency power is supplied to the antenna electrode and the exciting coil,

an impedance element is connected to the shield electrode, and a shield voltage is applied to the shield electrode by way of the exciting coil.

3. (Original) A plasma processing apparatus according to claim 2,
wherein

a slit is formed at a portion, of the shield electrode, facing the exciting coil in a direction substantially perpendicular to the exciting coil.

4. (Original) A plasma processing apparatus according to claim 2,
wherein

a slit is formed at a portion, of the shield electrode, facing the exciting coil in a direction substantially perpendicular to the exciting coil, and an opening or a dent is formed at a central portion of the shield electrode on an upper surface of the vacuum reactor.

5. (Original) A plasma processing apparatus according to claim 1,

wherein

the antenna electrode and the shield electrode are connected by way of a power divider and a phase shifter.

6. (Original) A plasma processing apparatus according to claim 2, wherein the antenna electrode and the exciting coil are connected by way of a power divider and a phase shifter.

7. (Original) A plasma processing apparatus according to claim 1, wherein a disk-shaped cavity having a diameter corresponding to nodes of a standing wave formed on an upper surface of the specimen placed during plasma processing is formed at a central part of the antenna electrode.

8. (Original) A plasma processing apparatus according to claim 2, wherein a disk-shaped cavity having a diameter corresponding to nodes of a standing wave formed on an upper surface of the specimen placed during plasma processing is formed at a central part of the antenna electrode.

9. (Original) A plasma processing apparatus according to claim 1, wherein a disk-shaped dielectric layer having a diameter corresponding to nodes of a standing wave formed on an upper surface of the specimen placed during plasma processing is formed at a central part of the antenna electrode.

10. (Original) A plasma processing apparatus according to claim 2, wherein

a disk-shaped dielectric layer having a diameter corresponding to nodes of a standing wave formed on an upper surface of the specimen placed during plasma processing is formed at a central part of the antenna electrode.

11. (Currently Amended) A plasma processing apparatus comprising:
a vacuum reactor made of dielectric having processing gas introduction means and evacuation means;
a shield electrode formed on an outer circumferential wall of the vacuum reactor;
a specimen placing device having an antenna electrode for irradiating high frequency power into the vacuum reactor; and
a ZrO_2 flame-sprayed film formed on an inner wall surface of the vacuum reactor made of the dielectric;
wherein the shield electrode surrounds the vacuum reactor so as to control voltage of the outer circumferential wall, and first high frequency power is supplied to the antenna electrode, and high frequency power at a frequency lower than that of the first high frequency power is supplied to the antenna electrode and the shield electrode.

12. (Original) A plasma processing apparatus according to claim 9 wherein a Y_2O_3 flame-sprayed film is provided on an inner wall surface of the vacuum reactor made of the dielectric.